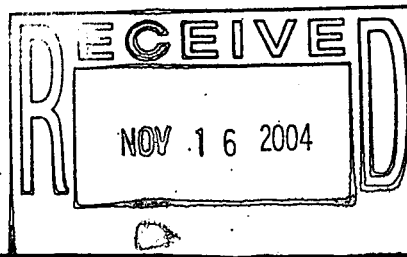




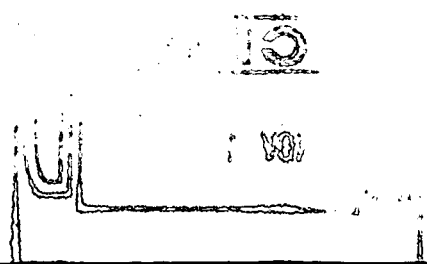
**Environmental Restoration  
RFCA Standard Operating Protocol  
for Routine Soil Remediation  
FY04 Notification #04-20  
IHSS Group 600-4**



**November 2004**

ADMIN RECORD  
IA-A-002430

1/12



**Environmental Restoration  
RFCA Standard Operating Protocol  
for Routine Soil Remediation  
FY04 Notification #04-20  
IHSS Group 600-4**

Approval received from the Colorado Department of Public Health and Environment

September 22, 2004.

Approval letter is contained in the Administrative Record.

**November 2004**

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## ACRONYMS

AAESE	Accelerated Action Ecological Screening Evaluation
AL	action level
bgs	below ground surface
BMP	best management practice
COC	contaminant of concern
CRA	Comprehensive Risk Assessment
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation
Ft	feet or foot
FY	Fiscal Year
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
PCB	polychlorinated biphenyl
pCi/g	picocurie per gram
PCOC	potential contaminant of concern
PDF	portable document format
nCi/g	nanocurie per gram
RAO	remedial action objective
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SAP	sampling and analysis plan
SSRS	Subsurface Soil Risk Screen
VOC	volatile organic compound
WRW	wildlife refuge worker

## 1.0 INTRODUCTION

This document provides notice of the intent to conduct an accelerated action within Individual Hazardous Substance Site (IHSS) Group 600-4 in the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA), as shown on Figure 1. The purpose of this Notification is to invoke the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a).

Soil with contaminant concentrations greater than the RFCA wildlife refuge worker (WRW) action levels (ALs) or as indicated by the Subsurface Soil Risk Screen (SSRS) and associated debris will be removed in accordance with RFCA (DOE et al. 2003) and the ER RSOP (DOE 2003a). Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are included where appropriate. IHSS Group 600-4 will be evaluated as part of the Accelerated Action Ecological Screening Evaluation (AAESE) and Sitewide Comprehensive Risk Assessment (CRA).

## 2.0 IHSS GROUP 600-4

IHSS Group 600-4 is located in the south central portion of the IA, and consists of one site, IHSS 600-160 – Radioactive Site Building 444 Parking Lot. Located east of Building 444, IHSS 600-160 consists of the Building 444 parking lot and a section of Seventh Avenue.

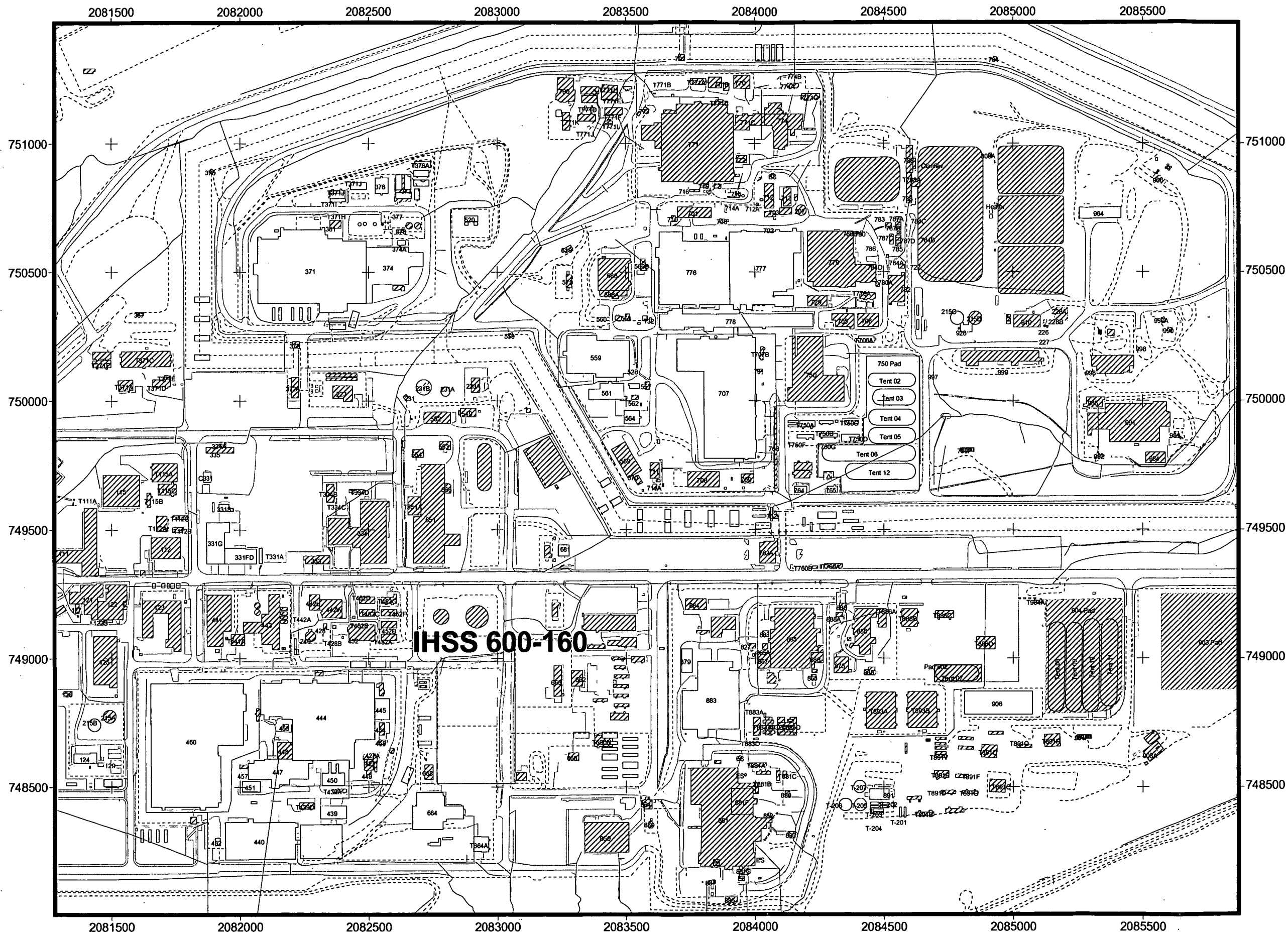
### 2.1 IHSS Group 600-4 Site History and Conditions

Historical information and soil data for IHSS 600-4 are available in Appendix C of the IA Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001), the Historical Release Reports (HRRs) (DOE 1992-2003), the IA Data Summary Report (DOE 2000), and IASAP Addendum #IA-03-09 (DOE 2003b). IHSS 600-160 was previously used as a storage area containing punctured or leaking waste drums and boxes. Potential contaminants of concern (PCOCs) identified for surface and subsurface soil at the IHSS 600-160 were radionuclides, metals, volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) as shown in Table 1 (DOE 2003b).

Table 1  
IHSS Group 600-4 Potential Contaminants of Concern

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
600-4	600-160 – Radioactive Site Building 444 Parking Lot	Radionuclides Metals VOCs PCBs	Surface and Subsurface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Statistical

**Figure 1**  
**IHSS 600-4**  
**Location Map**



**Key**

- Paved area
- Dirt road
- Fence
- Stream, ditch, or other drainage
- Building
- Demolished structure
- IHSS



90 0 90 180 Feet

Scale = 1:4,500

State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:



Historical soil data, presented in IASAP Addendum #IA-03-09, indicate that all contaminant concentrations are less than WRW ALs. Accelerated action characterization data, conducted in accordance with IASAP Addendum #IA-03-09, indicate two locations with soil concentrations greater than WRW ALs, as listed in Table 2 and shown on Figure 3. One plutonium activity exceeded the WRW AL in the surface soil sample collected at Sampling Location CA37-013, and one arsenic concentration exceeded the WRW AL in the subsurface soil sample collected at Sampling Location CB37-000.

**Table 2**  
**IHSS 600-4 Group Notification WRW AL Exceedences in Soil**

Sampling Location	Media	Interval (ft bgs)	Analyte	WRW (pCi/g)	Sample Results (pCi/g)
CA37-013	Surface Soil	0.0 to 0.5	Plutonium	50.0	183.77
CB37-000	Subsurface Soil	0.5 to 2.5	Arsenic	22.2	23.00

## **2.2 RFCA Surface Soil Risk Screen**

A SSRS is performed when non-radionuclides and uranium are present in soil below 6 inches from the ground surface, when americium-241 and plutonium-239/240 are present below 3 feet (ft) from the ground surface, and when soil exists beneath below-grade structures. Current site conditions are evaluated to determine whether remediation is required by the SSRS. The SSRS will be conducted again after the accelerated action and related confirmation sampling tasks are completed. The revised SSRS will be included in the IHSS Group 600-4 Closeout Report.

The SSRS is presented below.

### **Screen 1 – Are contaminant of concern (COC) concentrations below Table 3 WRW Soil Action Levels?**

No. Contaminant concentrations in all subsurface soil samples were less than WRW ALs except for arsenic in the sample collected at Sampling Location CB37-000 (Table 2).

### **Screen 2 – Is there a potential for subsurface soil to become surface soil (landslide and erosion areas identified on Figure 1)?**

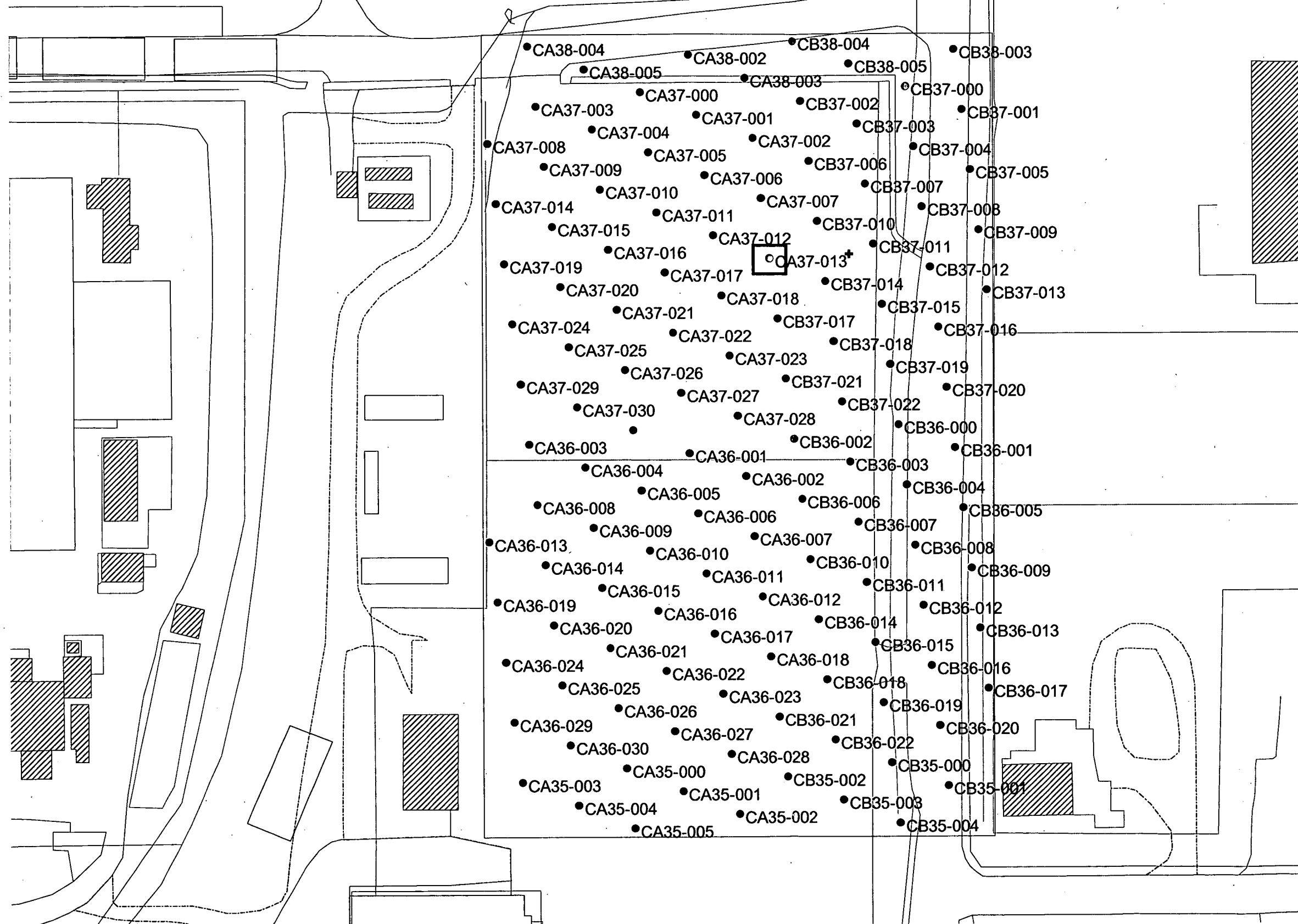
No. IHSS Group 600-4 is not located in an area prone to landslides or high erosion, as identified on Attachment 5, Figure 1 of RFCA (DOE et al. 2003).

### **Screen 3 – Does subsurface soil radiological contamination exceed criteria defined in Section 5.3 and Attachment 14?**

No. Accelerated action characterization data indicate that radionuclide activities in subsurface soil at IHSS Group 600-4 do not exceed RFCA criteria as defined in Section 5.3. Attachment 14 applies only to subsurface contamination associated with Original Process Waste Lines (OPWL)(DOE et al. 2003).

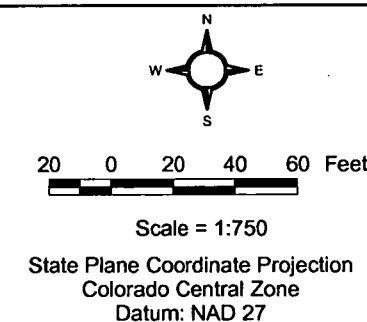


# IHSS 600-160



**Figure 2**  
**IHSS Group 600-4**  
**Potential Remediation Area**

- IHSS 600-160
- Building
- Demolished structure
- Paved areas
- Dirt roads
- Fences
- Streams, ditches, or other drainage
- Sampling locations
- Sampling location with concentration greater than WRW AL
- Potential remediation area
- Approximate location of air sampler



U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:

**RADMS**

Prepared for:

**KAISER HILL**  
COMPANY

File: w:\projects\2003\600-4\characterization\600-4characterization\_03-03.apr

Date: 08/27/04

**Screen 4 – Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of the surface water standards?**

No. Because IHSS Group 600-4 is not located in an area prone to landslides or high erosion, and the estimated quantity of contaminated surface soil is limited, there is little potential that IHSS Group 600-4 soil could impact surface water during site remediation.

**2.3 Remediation Plan**

- At Sampling Location CA37-013, remove soil hotspot, with plutonium-239/240 or americium-241 activities greater than the RFCA WRW AL, to a depth of 3 feet, or to less than the applicable AL, whichever comes first.
- If characterization data indicate, remove soil with non-radionuclide or uranium contaminant concentrations greater than the RFCA WRW ALs to a depth of 6 inches. If soil contamination greater than the ALs extends below 6 inches in depth, perform the SSRS to evaluate the need for further accelerated action.
- If characterization data indicate, remove soil with plutonium-239/240 or americium-241 activities greater than the RFCA WRW AL, to a depth of 3 feet, or to less than the applicable AL, whichever comes first. If concentrations are greater than 3 nanocuries per gram (nCi/g) between 3 and 6 feet, characterize and remediate in accordance with RFCA Attachment 5 (DOE et al 2003). If plutonium-239/240 or americium-241 is present at activities greater than the RFCA WRW AL but less than 3 nCi/g below 6 feet, conduct an SSRS.
- After contaminated soil is removed, collect confirmation soil samples in accordance with the IASAP (DOE 2001).
- Additional accelerated actions may be conducted in the future at other sites in the IHSS Group 600-4 if accelerated action characterization sampling results indicate such actions are warranted. A Regulatory Contact Record will document additional remediation areas.

The potential remediation area within IHSS Group 600-4 is shown on Figure 2. At Sampling Location CA37-013, remediation will be conducted by excavating a minimum of 6 inches of soil from a 3 ft by 3 ft area. Confirmation samples will be collected at the bottom of the excavation and in the excavation sidewalls. Samples will be analyzed for plutonium via alpha spectroscopy.

Based on the SSRS, the subsurface soil exceedance of arsenic at Sampling Location CB37-000 does not require remediation. It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, and organics greater than background means plus two standard deviations or detection limits, but below RFCA WRW ALs. All project data, including, accelerated action characterization data,

accelerated action activities, confirmation sampling results, and the revised SSRS, will be presented in the IHSS Group 600-4 Closeout Report.

## **2.4 Stewardship Evaluation**

Because the full extent of remediation is not known at this time, a stewardship evaluation will be conducted during remediation using the consultative process and will be documented in the IHSS Group 600-4 Closeout Report. A map of residual contamination will be generated after remediation.

The current stewardship actions and recommendations for IHSS Group 600-4 are as follows:

- Use best management practices (BMP) to reduce erosion into surface water drainage.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including soil excavations controlled through the Site soil disturbance permit process.
- Implement long-term stewardship actions, including the following:
  - Prohibitions on construction of buildings in the IA;
  - Restrictions on excavations or other soil disturbance; and
  - Prohibitions on groundwater pumping in the IA.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

## **2.5 Accelerated Action Remediation Goals**

ER RSOP remedial action objectives (RAOs) include the following:

- Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
- Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering control; and
- Minimize the spread of contaminants during implementation of accelerated actions.

## **2.6 Treatment**

Not applicable.

## **2.7 Project-Specific Monitoring**

A high-volume air sampler may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations. The approximate location of the air sampler is shown on Figure 2.

## **2.8 Resource Conservation and Recovery Act Units and Intended Waste Disposition**

Not applicable.

## **2.9 Administrative Documents**

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September.

DOE, 2001, Final Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation Modification, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2003b, Industrial Area Sampling and Analysis Plan Addendum #IA-03-09 for IHSS Group 600-4, Rocky Flats Environmental Technology Site, Golden, Colorado, August.

DOE, CDPHE, and EPA, 2003, RFCA Modifications to the Rocky Flats Cleanup Agreement Attachment, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

## **2.10 Projected Schedule**

Remediation of IHSS Group 600-4 is expected to begin in the fourth quarter of fiscal year (FY) 2004 (04).

## **3.0 PUBLIC PARTICIPATION**

ER RSOP Notification #04-20 activities will be discussed at the September 2004 ER/Decommissioning and Decontamination (D&D) Status meetings. A portable document format (PDF) version of this notification has been provided to the local governments. This Notification is available at the Rocky Flats Reading Rooms and on

the EDDIE (Environmental Data Dynamic Information Exchange) website at [www.rfets.gov](http://www.rfets.gov).

#### **4.0 REFERENCES**

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September.

DOE, 2001, Final Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

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